

What is claimed is as follows:

1. A method comprising the steps:
  - providing a segment of thermoplastic material tubing having a predetermined wall thickness and length, the segment having a proximal end portion, a distal end portion and a center portion;
  - removing material from a portion of at least one of the distal and proximal end portions of the segment to a desired reduced thickness while maintaining the temperature of substantially all of the segment below about the glass transition temperature of the thermoplastic material or below the highest glass transition temperature if the material is a block copolymer so as to form a balloon preform.
2. The method of claim 1 further comprising the step of:
  - drawing the preform to a predetermined length.
3. The method of claim 2 wherein during the drawing step the temperature of the segment is maintained below the glass transition temperature of the thermoplastic material or below the highest glass transition temperature if the material is a block copolymer.
4. The method of claim 1 further comprising the step of:
  - expanding the balloon preform in a mold to produce a balloon, the balloon having a body portion, wherein the center portion of said segment becomes the balloon body portion.
5. The method of claim 3 further comprising the step of:
  - expanding the balloon preform in a mold to produce a balloon, the balloon having a body portion, wherein the center portion of said segment becomes the balloon body portion.
- 25 6. The method of claim 1 wherein after the removing step, the thickness of the proximal end portion and the thickness of the distal end portion differ.
7. The method of claim 3 wherein after the removing step the wall thickness of the center portion is greater than wall the thickness of the at least one end portion from which material is removed.
- 30 8. The method of claim 1 wherein material is removed from both the proximal end portion and distal end portion to desired thicknesses during the removing step.

532518260  
532518261  
532518262  
532518263  
532518264

9. The method of claim 4 wherein after the drawing step the wall thickness of the center portion is greater than the thickness of the proximal and distal end portions.

10. The method of claim 1 wherein the material is removed by grinding during the removing step.

5 11. The method of claim 1 wherein the material is removed by chemical etching during the removing step.

12. The method of claim 1 wherein during the removing step all of the segment is maintained below the glass transition temperature of the thermoplastic material or below the highest glass transition temperature if the material is a block copolymer.

10 13. The method of claim 1 wherein a coolant is directed at the segment during the removing step to cool the segment.

14. The method of claim 14 wherein the coolant is selected from the group consisting of water, air, compressed gasses and mixtures thereof.

15. The method of claim 1 wherein the at least one portion is maintained at a temperature cooler than the remainder of the segment.

15 16. The method of claim 1, wherein the thermoplastic material is chosen from the group consisting of polyamide elastomers, polyester elastomers, polyamides, polyesters, polyethylenes, polyurethanes, polyethylene ionomers, and ethylene vinyl acetates.

17. A method comprising the steps:

20 providing a segment of thermoplastic material having a predetermined wall thickness and length, the segment having a proximal end portion, a distal end portion and a center portion;

removing material from at least one portion of the proximal end and distal end portions of the segment to a desired reduced thickness;

25 drawing the segment to a predetermined length; and

expanding the segment in a mold to produce a balloon, the balloon having a body portion, wherein the center portion of said segment becomes the balloon body portion.

18. The method of claim 17 wherein the temperature of substantially all of the

30 segment is maintained below the glass transition temperature of the thermoplastic

material or below the highest glass transition temperature if the material is a block copolymer during the removing step

19. The method of claim 17 wherein the temperature of the segment is maintained below the glass transition temperature of the thermoplastic material or below the highest glass transition temperature if the material is a block copolymer during the drawing step.
20. A balloon made in accordance with the method of claim 17, the balloon having a constant wall thickness over substantially its entire length on inflation to a desired pressure.
21. A preform for a medical balloon made in accordance with the method of claim 1.
- 10 22. A medical balloon made in accordance with the method of claim 5.
23. The medical balloon of claim 22 wherein the material is removed by a process selected from the group consisting of grinding and chemical etching.
24. A medical balloon preform made by a method comprising the steps:
  - providing a segment of material having a predetermined wall thickness
  - 15 and length, the segment having a proximal end portion, a distal end portion and a center portion, the center portion having a temperature;
  - removing material from at least one end portion from among the proximal end and distal end portions to a desired thickness.
25. The balloon of claim 24 wherein the material is thermoplastic and the temperature of the center portion of the segment is maintained during the removing step below the glass transition temperature of the thermoplastic material or below the highest glass transition temperature if the material is a block copolymer.
26. The balloon of claim 24 further comprising the step of drawing the segment to a predetermined length.
- 25 27. A medical balloon having:
  - a proximal waist portion having a proximal waist wall thickness;
  - a proximal cone portion having a proximal cone wall thickness;
  - a body portion having a body wall thickness;
  - a distal cone portion having a distal cone wall thickness; and
  - 30 a distal waist portion having a distal waist wall thickness;

5 10 15 20 25 30  
C 17

wherein the wall thickness of at least one balloon segment selected from the group consisting of the proximal waist, the proximal cone, the distal cone and the distal waist segments is less than the body wall thickness, the at least one segment having had material removed therefrom by grinding or chemical etching.

5 28. The medical balloon of claim 27 wherein the wall thickness of both the proximal cone portion and the distal cone portion are less than the body wall thickness.

29. The medical balloon of claim 27 wherein the wall thickness of the distal cone is less than the wall thickness of the proximal cone.

30. A medical balloon which when inflated to a desired pressure has a constant wall 10 thickness over substantially the entire length of the balloon.

31. A method comprising the steps:

providing a segment of tubing having a predetermined wall thickness and length, the segment having a proximal end portion, a distal end portion and a center portion;

15 removing material from a portion of at least one of the distal and proximal end portions of the segment to a desired reduced thickness so as to form a balloon preform.

32. The method of claim 31 further comprising the step of forming a balloon from the preform.